1. A method of increasing or maintaining the number of functional cells of a predetermined type in a mammal, comprising the steps of:

a) exposing said mammal to MHC class I and peptide, and

b) prior to, after, or concurrently with step a), treating said mammal to

5   kill or inactivate autoimmune cells of said mammal.

2. The method of claim 1 wherein step a) comprises exposing said mammal to a MHC class I/peptide complex or exposing said mammal to cells capable of expressing MHC class I and peptide.

3. The method of claim 1, wherein said method further comprises

10   maintaining the blood glucose level in said mammal within a normal range.

4. A method of increasing or maintaining the number of functional cells of a predetermined type in a mammal, said method comprising the steps of:

a) providing a sample of cells of said predetermined type,

b) treating said cells to modify the presentation of an antigen of said cells

15   that is capable of causing an *in vivo* autoimmune cell-mediated rejection response,

c) introducing said treated cells into said mammal, and

d) prior to, after, or concurrently with step c), treating said mammal to

kill or inactivate autoimmune cells of said mammal.

5. The method of claim 4, wherein said mammal is a human patient.

20   6. The method of claim 5, wherein said cells are insulin-producing islet

cells.

7. The method of claim 4, wherein step b) comprises eliminating, reducing, or masking said antigen.

8. The method of claim 4, wherein step d) comprises administering to said mammal TNF-alpha or a TNF-alpha inducing substance.

9. The method of claim 8, wherein the TNF-alpha inducing substance is tissue plasminogen activator, LPS, interleukin-1, UV light, or an intracellular mediator of the TNF-alpha signaling pathway.

10. The method of claim 1, wherein said mammal has a mutation in the *lmp2* gene.

11. The method of claim 4, wherein said mammal has a mutation in the *lmp2* gene or equivalent thereof.

12. A method of increasing the number of functional cells of a predetermined type in a mammal, said method comprising the steps of:

a) treating said mammal with an agent that kills or inactivates autoimmune cells of said mammal;

b) periodically monitoring the cell death rate of said autoimmune cells; and

c) periodically adjusting the dosage of said agent administered to said mammal based on the monitoring of step b).

13. The method of claim 12, wherein said agent comprises TNF-alpha, a

TNF-alpha inducing substance, tissue plasminogen activator, LPS, interleukin-1, UV light, or an intracellular mediator of the TNF-alpha signaling pathway.

14. The method of claim 8, wherein step d) comprises administering to said mammal two agents that increase TNF-alpha.

15. The method of claim 12, wherein step a) comprises administering to said mammal two agents that increase TNF-alpha.

16. A method for diagnosing an autoimmune disease or the predisposition to said disease in a mammal, said method comprising the steps of:

    a) providing peripheral cells from a mammal,

    b) treating said cells with a TNF-alpha treatment regimen, and

    c) detecting cell death of said peripheral cells, wherein an increase in cell death, when compared with control cells, is indicative of said mammal having an autoimmune disease or a predisposition to said disease.

17. The method of claim 16, wherein said peripheral cells comprise splenocytes, T lymphocytes, B lymphocytes, or cells of bone marrow origin.

18. The method of claim 16, wherein said mammal is a human patient.

19. The method of claim 16, wherein said TNF-alpha treatment regimen comprises treating said peripheral cell with TNF-alpha.